

## Claims

WHAT IS CLAIMED IS:

- Sub C1
- 5 1. An integrated differential receiver for an input/output pad comprising:  
 a single gate oxide differential receiver; and  
 a switchable voltage supply circuit, operatively coupled to the single gate  
 oxide differential receiver, switchable through at least one control signal to select a  
 differential receiver supply voltage for the single gate oxide differential receiver wherein  
 10 at least one of the selected supply voltages is different from an input/output pad supply  
voltage.
- 15 2. The receiver of claim 1 wherein the switchable voltage supply circuit selects the  
 differential receiver supply voltage that is a higher voltage than the I/O pad supply  
 voltage.
3. The receiver of claim 1 including an isolation output buffer operatively coupled to  
 a receiving circuit that outputs a signal.
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- 20 4. The receiver of claim 1 wherein the differential receiver receives a first reference  
 voltage on a first differential input and an input voltage on a second differential input and  
 wherein the switchable voltage supply circuit selects the differential receiver supply  
 voltage for the single gate oxide differential receiver to be a voltage level higher than a  
 maximum voltage level of the input voltage.
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- 25 5. The receiver of claim 1 wherein the switchable voltage supply circuit provides  
 either of at least an I/O pad supply voltage and a second reference supply voltage for the  
 differential receiver based on the control signal such that the reference voltage is selected  
 as the differential receiver supply voltage when the control signal indicates a maximum  
 30 input signal voltage to be less than the second reference voltage, and wherein the  
 switchable voltage supply circuit provides the I/O pad supply voltage as the differential
- Sub A6

receiver supply voltage when the control signal indicates a maximum input signal voltage to be greater than the second reference voltage.

5 6. The receiver of claim 1 wherein the switchable voltage supply circuit is operatively responsive to at least two control signals.

10 7. The receiver of claim 1 wherein the single gate oxide differential receiver includes a transistor, operatively coupled to an input transistor of a single gate differential input stage having a gate coupled to the first reference voltage, a source coupled to the single gate oxide differential receiver supply voltage, a drain coupled to a drain of the input transistor that receives the input signal.

15 8. The receiver of claim 1 wherein the receiver generates an output signal to circuitry for a video graphics processor.

20 9. The receiver of claim 1 wherein the switchable voltage supply circuit includes a plurality of voltage switching circuits operative to alternately activate a common current source to selectively provide the differential receiver supply voltage for the single gate oxide differential receiver.

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14. A method for controlling a voltage supply for a differential receiver comprising the steps of:

providing either of at least an I/O pad supply voltage and a second reference supply voltage for a single gate oxide differential receiver based on a control signal such that the reference supply voltage is selected as the differential receiver supply voltage when the control signal indicates a maximum input signal voltage to be less than the second reference voltage, and

providing the I/O pad supply voltage as the differential receiver supply voltage when the control signal indicates a maximum input signal voltage to be greater than the second reference voltage.

15. The method of claim 14 including the step of buffering an output signal from the single gate oxide differential receiver prior to the output signal being received by core circuitry.

16. The method of claim 14 including receiving a first reference voltage on a first differential input and an input voltage on a second differential input and selecting the differential receiver supply voltage for a single gate oxide differential receiver to be a voltage level higher than a maximum voltage level of the input voltage.

17. The method of claim 14 including providing either of at least an I/O pad supply voltage and a second reference supply voltage for a differential receiver based on the control signal such that the reference voltage is selected as the differential receiver supply voltage when the control signal indicates a maximum input signal voltage to be less than the second reference voltage, and providing the I/O pad supply voltage as the differential receiver supply voltage when the control signal indicates a maximum input signal voltage to be greater than the second reference voltage.